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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Tesuya Shirade

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EXAMINER

WATTS, JENNA A

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/575,973	Applicant(s) SHIRADE, TESUYA	
	Examiner Jenna A. Watts	Art Unit 1781	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,9,11,13,15,17 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,9,11,13,15,17 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/30/2010 has been entered.

Claim Objections

2. Claims 5 and 17 are objected to because of the following informalities:
Regarding Claim 5, the word "spray" should be amended to read "spraying" in light of the wording of the claim. Regarding Claim 17, the word "in" following "wherein" should be removed from the claim for clarity purposes. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-3, 5, 9, 11, 13, 15, 17, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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5. Regarding Claim 1 in particular, it is unclear whether the raw materials claimed are already in the form of the fish paste or are processed into the fish paste in light of the preamble to the claim that claims a method for sterilizing and producing a fish-paste product, however, Claim 1 claims in the first part of the claim "adding the ozone gas-containing microbubbles generated in water to raw materials of a fish-paste product". Therefore, it is unclear whether the fish paste is already produced at the beginning of the method.

6. Claim 1 recites the limitation "the interfaces of the ozone gas-containing microbubbles" in line 5 of the claim. There is insufficient antecedent basis for this limitation in the claim.

7. Claim 9 recites the limitation "at the time of pestling of the raw materials" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim. Furthermore, it is unclear when the pestling of the raw materials is taking place in light of the method steps of Claim 1.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. **Claims 1-3, 5, 9, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoashi et al. (Japanese Publication No. 56-121462) in view of Garlick (U.S. Patent No. 6,537,494) and in light of Merriam- Webster's Online Dictionary.**

11. Regarding Claims 1, 3 and 5, Hoachi teaches a method for sterilizing and producing a fish-paste product (see English Abstract of JP 56-121462) by agitating and processing fish materials in the presence of ozone air (Page 1, lower left column of Foreign Publication JP 56-121462). Thus, it is understood that the ozone and raw materials of the fish-paste product are in contact with each other during the processing of the fish paste. Hoachi teaches that the ozone gas is fed through an ozonizer into a hermetically sealed agitator that contains the raw materials of a fish-paste product, the agitator containing a blade that agitates and grinds the raw materials into a fish-paste product in the presence of the ozone (see Page 1, Claim 1, Page 3, upper left column and Page 3, Figure 1 of Foreign Publication JP 56-121462), thus the ozone gas can be seen to be stimulated by the movement of the blade and raw materials of the fish paste product. Hoachi may not specifically refer to the materials of the fish-paste product as

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raw, but teaches the processing and production of boiled fish paste, fried fish balls, etc.(see English Abstract of JP 56-121462) that are all cooked products, thus it is understood that prior to processing the materials of the fish-paste product are raw. The raw materials are deemed to include protein and lipid contained in the fish-paste products because Hoachi teaches that the fish paste can be made up of fillets or other fish meat (see Hoachi, Page 1, lower right column of Foreign Publication JP 56-121462), which would be expected to contain both protein and lipids. Furthermore, Applicant discloses that tissues in raw materials of the fish-paste product refer mainly to protein and lipid (See instant application, Page 6, lines 1-2).

12. Regarding Claims 1, 3 and 5, Hoachi does not teach the addition of ozone gas-containing microbubbles generated in water to the raw materials of the fish paste, and further does not teach the coating of the interfaces of the bubbles with tissues composed of raw materials, thereby maintaining the longevity of the ozone gas-containing microbubbles and giving stimulation to a part of the ozone gas-containing microbubbles thereby rupturing coating shells of the ozone gas-containing microbubbles while said ozone gas-containing microbubbles are in the fish-paste product, thereby sterilizing the fish-paste product by the formation of active oxygen and free-radical species, and where the microbubbles have a diameter of 50 micrometers or less.

13. Garlick teaches ozone as a broad-spectrum sterilizing agent and teaches a method of providing a sterilizing fog characterized by droplet size range and its use in sterilizing food having irregular surfaces such as muscle tissue (Column 1, lines 8-10, 32-40 and Column 3, lines 60-65). Garlick teaches that in a gaseous form, most

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sterilizing agents are rather hazardous and difficult to control exposure time and ozone decays in a gaseous form far too quickly to be useful in food processing. Thus water is the preferred media for transporting ozone and other sterilizing agents to a contaminated site for oxidative anti-microbial activity (Column 1, lines 45-50). Garlick further teaches foods can be immersed in a liquid bath but can also be sprayed onto a food and teaches that spray systems do not provide a uniform coverage of the product and can utilize large amount of water, accordingly, spray systems employing larger droplets of water containing ozone, have not been effective because of a droplet size that is too large to effect surface penetration of irregularities (Column 1, lines 53-56 and 60-65).

14. Garlick teaches that a further issue is that spray systems having large droplets are unable to penetrate micro-cavities on irregular surfaces of food products, such as meats, and water surface tension prevents the large drops and liquid bath from penetrating these regions and the bacteria present in micro-cavities remains undisturbed (Column 2, lines 5-10). Garlick solves the above prior art problems by using an ozone fog/spray/mist, wherein the fog is characterized by droplets having an average diameter of from about 0.0005 mm to about 0.05 mm (Column 2, lines 20-25), where 0.05 mm equals 50 micrometers. Therefore, since Garlick teaches that the average diameter of the particles is at the greatest 50 micrometers or less than 50 micrometers, it would be expected that a majority of the particles have a diameter less than 50 micrometers. Garlick teaches a method of providing a more useful ozone fog that is able to access irregular surfaces of food products, due to its very small droplet size coupled

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with a high ozone concentration in water (Column 3, lines 60-64). Garlick teaches a slowed fall rate of the smaller droplet sized particles, allowing a longer contact time with the surface and can more easily fill micro-cavities of the irregular surface of the foods (Column 4, lines 13-15). Garlick teaches that the highly ozonated water is used to either feed an immersion tank for direct contact with food products or to create the inventive fog in a vapor cell (Column 4, lines 33-35).

15. Therefore, Garlick's teaching of ozonated water used to create an ozone fog having the claimed diameter of the ozone particles is deemed to read on adding water containing the ozone gas-containing particles and since Garlick teaches the claimed diameter of the ozone bubbles, Garlick is deemed to teach ozone gas-containing microbubbles. Furthermore, Garlick's teaching of a fog comprising the claimed droplet size of ozone is deemed to read on spraying a mist of the water containing the ozone gas-containing microbubbles. Garlick further teaches an embodiment wherein the food may be immersed in an immersion tank comprising the highly concentrated ozone water and one or a plurality of ultrasonic scrubbers that agitate the food product surface micro-cavities to allow for deeper penetration of the highly concentrated ozone water. Such a process allows for a better disinfection of food products (Column 5, lines 35-45). Such agitation can be seen as stimulating a part of the ozone-gas containing microbubbles, which would be expected to rupture the coating walls, thereby sterilizing the fish paste.

16. Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made, for the method of sterilizing fish paste, as taught by

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Hoashi, to have included adding water containing microbubbles of ozone having the claimed diameter and in the form of a mist or fog, because Garlick teaches that foodstuffs having irregular surfaces, such as muscle tissue, can be more effectively sterilized using water containing microbubbles of ozone than gas-containing ozone, because the ozone microbubbles having the claimed diameter are better able to penetrate to the micro-cavities of the food, thereby sterilizing any bacteria present. One of ordinary skill in the art would have been motivated to add water containing microbubbles of ozone having the claimed diameter and in the form of a mist or fog in order to quickly and effectively insure the sterilization of a food, such as fish paste, so that it is safe for the consuming public.

17. Therefore, since Hoashi in view of Garlick teach adding the ozone gas containing microbubbles having the claimed diameter in the form of a mist or fog to the raw materials of the fish paste product and further teaches that the smaller ozone droplet size enables the more enhanced penetration of micro-cavities present in the food product, Hoashi in view of Garlick are deemed to teach that the microbubbles of ozone are penetrating the solid foodstuff, and therefore the microbubbles of ozone taught by Hoashi in view of Garlick would therefore create a coating or a shell composed of raw materials of the fish-paste product, thereby maintaining the longevity of the ozone gas-containing microbubbles, because since Hoashi in view of Garlick teaches the claimed ozone composition and its method of delivery, such an ozone composition will react or co-act in the same manner as claimed by Applicant, and therefore, the properties of

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these components will necessarily be present because a component and its properties are inseparable. *In re Papesch*, 137 USPQ 43 (CCPA 1963).

18. Similarly, since Applicant discloses that ozone gas present in the microbubbles is released into surrounding tissues of the fish-paste product and that this ozone gas is rapidly converted by autolysis into oxygen and in this process, the ozone gas transiently forms active oxygen species and free radical species (see instant specification, page 7, Paragraph 2), it would be expected that in the method of Hoashi in view of Garlick, when the ozone gas is released into the foodstuff and the foodstuff is sterilized, this would be due to the dissolution of the ozone gas into the foodstuff and the conversion of the ozone gas to the claimed active oxygen and free-radical species.

19. Regarding Claim 2, Hoachi in view of Garlick are deemed to teach germ-free anti-bacterial fish paste products because Hoachi in view of Garlick teach a method of sterilizing a food paste using ozone microbubbles (see English Abstract of JP 56-121462), thereby producing a germ-free anti-bacterial fish paste. It is noted that Applicants' Claim 2 is written in a product-by-process format and as such, it is the novelty of the instantly claimed product that needs to be established and not that of the recited process steps. *In re Brown*, 173 USPQ 685 (CCPA 1972); *In re Wertheim*, 191 USPQ (CCPA 1976). Regarding Claim 2, since the product shown by these references is a germ-free anti-bacterial fish-paste product, the product is met.

20. Regarding Claim 9, Hoachi in view of Garlick teach that the stimulation comprises blending, mincing and processing of the fish meat into a paste food in the presence of ozone inside the agitator with the blade (see Hoachi, English abstract of JP

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56-121462). Thus, the raw materials would be rubbing together due to the agitating action of the blade inside the agitator. According to Merriam- Webster's Online Dictionary, pestling can be defined as to beat, pound or pulverize and is deemed synonymous with the actions taught by Hoachi because both result in the production of a fish paste product. Thus, Hoachi in view of Garlick are deemed to meet the limitations of Claim 9.

21. Regarding Claim 15, Hoashi in view of Garlick teach that the stimulation comprises heating raw materials of the fish paste product because Hoashi teaches the preparation of boiled fish paste and fried fish balls (see Hoachi, English abstract of JP 56-121462). Boiling and frying are methods of heating, and thus stimulating, raw materials.

22. Regarding Claim 19, Hoashi in view of Garlick are taken as cited above in the rejection of Claims 1 and 9. Since Hoashi in view of Garlick teach the claimed method using the action of grinding the fish meat into a paste food in the presence of ozone, which reads on the action of pestling, which is a claimed method of providing stimulation, and Applicant discloses that the ozone gas-containing microbubbles contained in raw materials of the fish paste product are not wholly ruptured but partially stimulated and further teaches that the method of stimulating is preferably carried out by pestling of the raw materials (see instant specification, Page 8, Paragraphs 2 and 3), it would be expected that the method of Hoashi in view of Garlick, does not rupture all of the ozone gas-containing microbubbles.

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23. Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoashi et al. (Japanese Publication No. 56-121462) in view of Garlick (U.S. Patent No. 6,537,494) and further in view of Swart et al. (U.S.P.A. 2002/0192340).

24. Hoashi in view of Garlick are relied upon as above in the rejection of Claim 1.

25. Regarding Claim 11, Hoashi in view of Garlick do not teach that the stimulation comprises high frequency irradiation of the raw materials of the fish-paste product.

26. Swart teaches a method for reducing a microbial burden on a food product that includes contacting a food product with an antimicrobial agent, such as ozone (Page 6, Paragraph 58), via spraying or immersion in the antimicrobial agent (and Page 17, Paragraph 176) and irradiating the food product (Page 1, Paragraph 2) using gamma and x-rays (Page 1, Paragraph 6), which are known forms of high-frequency radiation. Swart teaches that the method is appropriate for fish products of various forms, including processed meats, formed products, minced products, etc. (Page 2, Paragraph 23). Swart teaches that in certain embodiments, contacting the food with an antimicrobial agent and irradiating produce a synergistic reduction in the microbial burden on the food product (Page 2, Paragraph 12). Swart further teaches that at the present time, irradiation of food product is the only commercially viable technology sufficiently effective at destroying harmful microbes or insects on or in raw or ready to eat product (Page 1, Paragraph 4). The radiation from the high frequency waves would be expected to generate the stimulation.

27. Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made, for the method of sterilizing a fish paste product, as

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taught by Hoashi in view of Garlick, to have comprised the stimulation of the raw materials of the fish-paste products via high frequency radiation, as taught by Swart, because Swart teaches that high frequency irradiation is the only commercially viable technology sufficiently effective at destroying harmful microbes in raw products, and further teaches that there is a synergistic effect when used with an antimicrobial agent such as ozone. One of ordinary skill in the art would have been motivated to combine the technologies of ozone and high frequency irradiation, as taught by Swart, in order to effectively destroy harmful bacteria on ready to eat products, such as fish paste products, in order to create products safe for consumption.

28. Regarding Claim 17, Hoashi in view of Garlick teach that the raw materials of the fish paste product are further processed into a paste food following the ozone treatment and the rupturing of the coating shells of the ozone gas containing microbubbles (see Hoashi, English abstract of JP 56-121462) but do not teach that the product is packaged and further subjected to the stimulation to rupture coating shells of the ozone gas-containing microbubbles contained in the fish-paste products, thereby sterilizing the fish paste product.

29. Swart teaches that when the treatment with the antimicrobial agent precedes irradiating, any of a variety of processing steps can be conducted between irradiating and treating with the antimicrobial agent (Page 7, Paragraph 66). Swart further teaches that the food product can be packaged before irradiating (Page 7, Paragraph 66). Therefore, since Swart teaches the stimulation, it follows that this would result in the

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rupturing of the coating shells of the ozone gas-containing microbubbles contained in the fish-paste products, thereby sterilizing the fish-paste product.

30. Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made, for the method of sterilizing of a fish-paste product, as taught by Hoashi in view of Garlick, to have further comprised packaging and stimulating via irradiation, as taught by Swart, because Swart teaches that foods can be packaged prior to receiving high frequency irradiation, which is the only commercially viable technology sufficiently effective at destroying harmful microbes in raw products, and further teaches that there is a synergistic effect when used with an antimicrobial agent such as ozone. One of ordinary skill in the art would have been motivated to combine the technologies of ozone and high frequency irradiation, as taught by Swart, in order to effectively destroy harmful bacteria on packaged ready to eat products, such as packaged fish paste products, in order to create packaged products safe for consumption.

31. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoashi et al. (Japanese Publication No. 56-121462) in view of Garlick (U.S. Patent No. 6,537,494) and further in view of Ikeuchi (U.S. Patent No. 4,622,228).

32. Hoashi in view of Garlick are relied upon as above in the rejection of Claim 1.

33. Hoashi in view of Garlick do not teach that the stimulation comprises microwave irradiation of raw materials of the fish-paste product.

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34. Ikeuchi teaches a method of making a crab leg – like paste stick product (Column 1, lines 28-29), wherein the product is heated by the radiation of a microwave oven (Column 1, lines 39-40 and Column 2, lines 42-43). Ikeuchi teaches that, by using microwave radiation as the heat source, the prior art methods of heating in boiling water or steam are not required and the processing space can be reduced effectively and further teaches that it is preferred that the heating apparatus be a microwave oven in order to reduce the cooking time (Column 3, lines 27-31). The radiation from the microwave oven would be expected to generate the stimulation.

35. Both Hoashi and Ikeuchi are solving a similar problem of preparing a seafood based paste-like food product.

36. Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made, for the stimulation to comprise microwave radiation of the raw materials of the fish paste product because Ikeuchi teaches a method of making a seafood paste product using microwave radiation in order to reduce the cooking time and reduce processing space, as compared to prior art methods of heating. One of ordinary skill in the art would have been motivated to use microwave radiation for the source of the stimulation for the raw materials of the fish-paste products in order to decrease cooking time, thereby maximizing production and profits generated.

Response to Arguments

37. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

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38. It is the position of the Examiner that amended Claim 1 and all depending claims are found to be obvious in view of the prior art as set forth in the above rejection.

39. Regarding Claims 11, 13, and 15, and the limitations of the different methods of stimulation, the claims state "comprising" language, therefore, additional forms of stimulation, such as the grinding taught by Hoashi in view of Garlick are not precluded from the method steps of Claims 11-15. Furthermore, irradiation and heating methods are known to be used for food sterilization, and the prior art provides motivation for adding such methods to a food processing method in order to provide enhanced sterilization of the food, wherein Swart expressly teaches the synergistic effect of using ozone sterilization combined with the irradiation treatment. Therefore, in light of the teaching of Swart, one of ordinary skill in the art would have reasonably expected that the ozone microbubbles in the method of Hoashi in view of Garlick would be stimulated by such heating or irradiation methods as well, thereby increasing the effectiveness of the sterilization treatment.

Conclusion

40. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jenna A. Watts whose telephone number is (571) 270-7368. The examiner can normally be reached on Monday-Friday 9am-5:00pm.

41. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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42. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. SAYALA/
Primary Examiner, Art Unit 1781

/Jenna A. Watts/
Examiner, Art Unit 1781
April 16, 2010